

Gonzaga University

Transmission & Distribution
Engineering Certificate Program
(DE-FG02-05CH11297)

Transmission & Distribution Engineering Certificate Program

Background

- Shortage of trained power system Design Engineers well established
- Recent articles in trade press document what many of us already know – shortage will increase as experienced engineers retire over next 5 – 15 years
- Industry does not have sufficient number of trained replacements (limited hiring, downsizing, restrictions on recruitment of new graduates, etc.)

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- Few undergraduate programs retained power option – new graduates have little (if any) power engineering background
- New engineers may take 2 – 5 years to become fully productive - senior engineers have limited time to mentor
- Training opportunities generally limited to 2-3 day overview courses on design concepts offered by consulting companies – limited participation required by students

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Project Proposal

- Utility training needs highlighted by member of University Advisory Council
- Discussions with local (Northwest) utilities verify need
- Funding sources for course development and support identified
- Consultant hired to review existing courses nationwide and establish potential market

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Project Proposal (cont.)

Develop five courses specifically related to T-Line design

- T-Line Design – Introduction
- T-Line Design – Advanced
- Electric Grid Operations
- Project Development and Construction Methods
- Electrical Distribution Networks

- (Future:- Electrical Distribution Networks – Advanced)

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Students

- Engineering graduates (CE, ME, EE) with 0 – 5 years experience in utility industry – involved in T-Line or Substation Design (or related work)
- Experienced Design Engineers or Project Managers moving from other fields to utility industry
- Engineering undergraduates (seniors)

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Faculty

- Experienced engineers/managers with utility and/or consulting background (generally recommended by others)
- Existing GU faculty from CE, ME, and EE

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Program Details

- Five course Certificate Program (15 credit hours)
- Graduate level courses offered on-line over eight-week period (instead of typical 15 weeks)
- Content developed by industry experts, GU faculty, and JesuitNet (on-line hosting and CADE methodology)

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Program Details (cont.)

- Each course has mix of theory and industry practice
- Eight-week course typically split into four modules of approximately two weeks each – content equivalent to six classroom contact hours/week
- One industry expert (Adjunct Prof.) will be assigned to “teach” a two-week module – individual interest and experience

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Program Details (cont.)

- Experts provide practical details and calculation methods and regular faculty in-depth coverage, as required
- Adjunct faculty may teach same module many times – only 2+ week commitment from individual and company
- Later courses will likely include Substation Design, Protection, Environmental, Legal, Management, and Leadership – perhaps leading to a Master's level degree

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Activities

- Gonzaga faculty developed outline for each course (academic)
- T-Line consultant hired to identify actual industry need and provide more practical course outline
- JesuitNet hired to help develop course material (using CADE methodology) and host on-line content

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Activities (cont.)

- Avista loaned T-Line Manager as Interim Director and others provided expert support
- Workshop on CADE Methodology & course development
- Project activities not meeting target dates

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Accomplishments

- Completed market research on industry need and anticipated student numbers
- Identified and recruited 16 industry experts - support from Avista, BPA, PPUD, BBEC, Inland Power, Manitoba Hydro, Idaho Power, ATC, Pondera, and others

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Accomplishments (cont.)

- Completed two workshops
 - trained 15 industry experts and five faculty on CADE approach
 - currently working on details of lecture/module content
- Agreed on course content (academic and industry)
- Director hired to drive course development and bring project on-line

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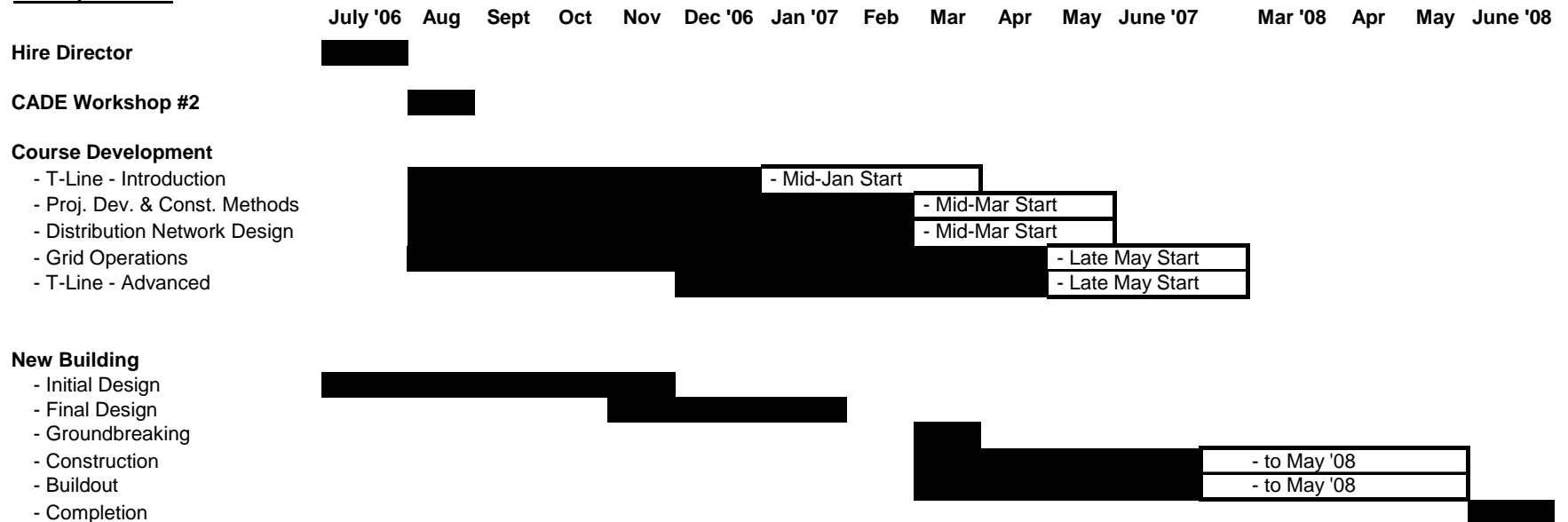
Accomplishments (cont.)

- Identified and purchased power system lab equipment and simulation software (undergraduate/on-line user)
- Preliminary discussions with School of Business, Leadership Program, and others

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Proposed Timeline

Activity Timeline - 3rd Oct. 2006



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Issues/Concerns

- Industry Experts - workload and time restrictions
- Web-hosting - currently by JesuitNet
- Course Development - ability to attract long-term industry support

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Summary

- Emphasis on working with industry (and faculty) to develop courses related to T-Line Design concepts
- Graduate level certificate program (5 courses)
- Course offerings will likely expand to include Substation Design, Protection, Environmental, Legal, Leadership and Management options